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# NOTICE OF ALLOWANCE AND FEE(S) DUE

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04/17/2009

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 600 GALLERIA PARKWAY, S.E. STE 1500 ATLANTA, GA 30339-5994 EXAMINER

WEINSTEIN, LEONARD J

ART UNIT PAPER NUMBER

3746

DATE MAILED: 04/17/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531.405	04/14/2005	Ralf Heinrich Bode	821923-1030	5861

TITLE OF INVENTION: COMPRESSOR UNIT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	07/17/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

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If the SMALL ENTITY is shown as NO:

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B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for

maintenance fee notifications. Note: A certificate of mailing can only be used for domestic mailings of the CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address) Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission. 24504 04/17/2009 Certificate of Mailing or Transmission THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below. 600 GALLERIA PARKWAY, S.E. STE 1500 ATLANTA, GA 30339-5994 (Depositor's name (Signature (Date APPLICATION NO. FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO. FILING DATE 10/531,405 04/14/2005 Ralf Heinrich Bode 821923-1030 5861 TITLE OF INVENTION: COMPRESSOR UNIT APPLN. TYPE SMALL ENTITY ISSUE FEE DUE PUBLICATION FEE DUE PREV. PAID ISSUE FEE TOTAL FEE(S) DUE DATE DUE nonprovisional NO \$1510 \$300 \$0 \$1810 07/17/2009 **EXAMINER** ART UNIT CLASS-SUBCLASS WEINSTEIN, LEONARD J 3746 417-423120 1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). 2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. or agents OR, alternatively, (2) the name of a single firm (having as a member a ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required. registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type) PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment. (A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY) 4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) 4a. The following fee(s) are submitted: lssue Fee A check is enclosed. Publication Fee (No small entity discount permitted) Payment by credit card. Form PTO-2038 is attached. The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_\_ (enclose an extra copy of this fo Advance Order - # of Copies \_ (enclose an extra copy of this form). 5. Change in Entity Status (from status indicated above) a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ■ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2). NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office. Authorized Signature Date Typed or printed name Registration No. This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/531,405	04/14/2005	Ralf Heinrich Bode	821923-1030	5861	
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	600 GALLERIA PARKWAY, S.E.		ART UNIT	PAPER NUMBER	
STE 1500 ATLANTA, GA 30	0339-5994		3746 DATE MAILED: 04/17/200	9	

### Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 483 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 483 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

	T	T	
	Application No.	Applicant(s)	
Notice of Allegative	10/531,405	BODE ET AL.	
Notice of Allowability	Examiner	Art Unit	
	LEONARD J. WEINSTEIN	3746	
The MAILING DATE of this communication app All claims being allowable, PROSECUTION ON THE MERITS IS herewith (or previously mailed), a Notice of Allowance (PTOL-85 NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT F of the Office or upon petition by the applicant. See 37 CFR 1.31	S (OR REMAINS) CLOSED in the or other appropriate communic RIGHTS. This application is subj	is application. If not included attention will be mailed in due cou	rse. <b>THIS</b>
1. $\boxtimes$ This communication is responsive to <u>01/13/2009</u> .			
2. ☑ The allowed claim(s) is/are <u>1 and 3-12</u> .			
<ul> <li>3.  Acknowledgment is made of a claim for foreign priority unally All b)  Some* c)  None of the:</li> <li>1.  Certified copies of the priority documents have</li> <li>2.  Certified copies of the priority documents have</li> <li>3.  Copies of the certified copies of the priority documents have</li> </ul>	re been received. re been received in Application N	lo	from the
	ocuments have been received in	this national stage application	nom the
International Bureau (PCT Rule 17.2(a)).  * Certified copies not received:			
Applicant has THREE MONTHS FROM THE "MAILING DATE" noted below. Failure to timely comply will result in ABANDONI THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.  4. A SUBSTITUTE OATH OR DECLARATION must be subminification.	MENT of this application.  mitted. Note the attached EXAMI	NER'S AMENDMENT or NOT	
	. ,	ciaration is deficient.	
<ol> <li>CORRECTED DRAWINGS (as "replacement sheets") mu</li> <li>(a) ☐ including changes required by the Notice of Draftsper</li> </ol>		DTO 048) attached	
1) ☐ hereto or 2) ☐ to Paper No./Mail Date	· ·	10-940) attached	
(b) ☐ including changes required by the attached Examiner Paper No./Mail Date	<b>=</b>	the Office action of	
Identifying indicia such as the application number (see 37 CFR each sheet. Replacement sheet(s) should be labeled as such in			k) of
<ol> <li>DEPOSIT OF and/or INFORMATION about the deposit attached Examiner's comment regarding REQUIREMENT</li> </ol>			the:
Attachment(s)	5 Notice of Info	and Detent Application	
<ol> <li>Notice of References Cited (PTO-892)</li> <li>Dotice of Draftperson's Patent Drawing Review (PTO-948)</li> </ol>		nal Patent Application	
<ol> <li>Information Disclosure Statements (PTO/SB/08),</li> </ol>		il Date	
Paper No./Mail Date			
4. Examiner's Comment Regarding Requirement for Deposit of Biological Material		tement of Reasons for Allowar	ıce
	9. Other	,	
/Leonard J Weinstein/ Examiner, Art Unit 3746	/Devon C Kramer		
LAGITHICI, AIT OTHE 3740	Supervisory Paten	t Examiner, Art Unit 3746	

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### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 16, 2008 has been entered.

2. The examiner acknowledges the amendments to claims 1, 11, and 12.

#### **EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

- 4. Claim 1 will be amended to:
  - A compressor unit, comprising: a <u>multistage</u> centrifugal compressor for compressing a gas and an electric motor having a stator and a rotor for driving the <u>multistage centrifugal</u> compressor, the rotor being supported by a first and second magnetic radial bearings each magnetic radial bearing being arranged at opposite ends of the rotor and <u>a</u> magnetic thrust bearing arranged adjacent to one of the <u>first or second</u> two magnetic radial bearings, the <u>multistage centrifugal</u> compressor and the electric motor being

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accommodated in a common gastight housing which is provided with a gas inlet and a gas outlet, the stator being accommodated and isolated from the multistage centrifugal compressor in a separate stator space, which is delimited by a toroidally shaped wall section, radially and axially surrounding the stator, of the common gastight housing of the compressor unit, a gastight partition which extends between the stator and the rotor of the electric motor, and - at least one a first end wall which extends between the gastight partition and the common gastight housing of the compressor unit and at least one further a second end wall arranged opposite the first end wall and configured to isolate the stator from the compressor in cooperation with the gastight partition and the first end wall, wherein the gastight partition extends freely between the stator and the rotor of the electric motor and comprises a material of sufficiently high strength for it to remain clear of the stator and the rotor under working pressures of the gas which may occur inside the common gastight housing, wherein the high-strength material of the gastight partition comprises a fibre-reinforced plastic.

The examiner notes that per the applicant's arguments on page 7 of the amendment of December 16, 2008 the limitation of "a centrifugal compressor" is being amended to be "a <u>multistage</u> centrifugal compressor." The examiner notes that the applicant argued that with respect to claim 1, the prior art did not teach a <u>multistage</u> compressor (among other features) and the examiner agrees. This aspect of the invention is considered to be one distinguishing aspect of the

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limitations as claimed, and given the applicant's arguments and the amendments to claims 11 and 12 in which the limitation of "a centrifugal compressor" was amended to be "a centrifugal <u>multistage</u> compressor" and "a <u>multistage</u> centrifugal compressor" respectively, it is appropriate to incorporate the same amendment to claim 1.

- 5. Claims 3-7, 9, and 10 The limitation of
  - "partition"

in each claim will be amended to be:

- --- gastight partition ---
- 6. Claim 8 The limitations of
  - "in which the partition and the end wall are separate parts"

will be amended to:

- --- in which the <u>gastight</u> partition and the <u>first and second</u> end wall<u>s</u> are separate parts ---
- 7. Claim 11 The limitations of
  - "A method of producing a partition for a compressor unit, the compressor unit comprising a centrifugal multistage compressor for compressing a gas and an electric motor having a stator and a rotor for driving the compressor, the rotor being supported by a first and second magnetic radial bearings each magnetic radial bearing being arranged at opposite ends of the rotor and magnetic thrust bearing arranged adjacent to one of the two magnetic radial bearings, the compressor

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and the electric motor being accommodated in a common gastight housing which is provided with a gas inlet and a gas outlet, the stator being accommodated in a separate stator space, which is delimited by a wall section, surrounding the stator, of the housing of the compressor unit, a gastight partition which extends between the stator and the rotor of the electric motor, and at least one end wall which extends between the partition and the housing of the compressor unit, wherein the partition extends freely between the partition and the housing of the compressor unit, wherein the partition extends freely between the stator and the rotor of the electric motor and comprises a material of sufficiently high strength for it to remain clear of the stator and the rotor under working pressures of the gas which may occur inside the housing, wherein the high-strength material of the partition comprises a cured fibre-reinforced plastic, in which the partition comprises a separate inner layer and outer layer"

#### will be amended to:

--- A method of producing a gastight partition for a compressor unit, the compressor unit comprising a centrifugal multistage centrifugal compressor for compressing a gas and an electric motor having a stator and a rotor for driving the multistage centrifugal compressor, the rotor being supported by a first and second magnetic radial bearings each magnetic radial bearing being arranged at opposite ends of the

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rotor and a magnetic thrust bearing arranged adjacent to one of the first and second magnetic radial bearings, the multistage centrifugal compressor and the electric motor being accommodated in a common gastight housing which is provided with a gas inlet and a gas outlet, the stator being accommodated in a separate stator space, which is delimited by a wall section, surrounding the stator, of the common gastight housing of the compressor unit, a gastight partition which extends between the stator and the rotor of the electric motor, and at least one end wall which extends between the gastight partition and the common gastight housing of the compressor unit, wherein the gastight partition extends freely between the stator and the rotor of the electric motor and comprises a material of sufficiently high strength for it to remain clear of the stator and the rotor under working pressures of the gas which may occur inside the common gastight housing, wherein the high-strength material of the gastight partition comprises a cured fibre-reinforced plastic, in which the gastight partition comprises a separate inner layer and outer layer --

#### 8. Claim 12 - the limitations of:

"a compressor unit, the compressor unit comprising a multistage
 centrifugal compressor for compressing a gas and an electric motor
 having a stator and a rotor for driving the compressor, the rotor being
 supported by a first and second magnetic radial bearings each

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magnetic radial bearing being arranged at opposite ends of the rotor and magnetic thrust bearing arranged adjacent to one of the two magnetic radial bearings, the compressor and the electric motor being accommodated in a common gastight housing which is provided with a gas inlet and a gas outlet, the stator being accommodated and isolated from the compressor in a separate stator space, which is delimited by a wall section, radially and axially surrounding the stator, of the housing of the compressor unit, a gastight partition which extends between the stator and the rotor of the electric motor, and at least one end wall which extends between the partition and the housing of the compressor unit and a further end wall arranged opposite the end wall and configured to isolate the stator from the compressor in cooperation with the partition and the end wall, wherein the partition extends freely between the stator and the rotor of the electric motor and comprises a material of sufficiently high strength for it to remain clear of the stator and the rotor under working pressures of the gas which may occur inside the housing, wherein the high-strength material of the partition comprises a fibre-reinforced plastic"

### will be amended to:

--- the <u>multistage centrifugal</u> compressor, the rotor being supported by
a first and second magnetic radial bearings each magnetic radial
bearing being arranged at opposite ends of the rotor and <u>a</u> magnetic

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thrust bearing arranged adjacent to one of the two magnetic radial bearings, the multistage centrifugal compressor and the electric motor being accommodated in a common gastight housing which is provided with a gas inlet and a gas outlet, the stator being accommodated and isolated from the multistage centrifugal compressor in a separate stator space, which is delimited by a wall section, radially and axially surrounding the stator, of the common gastight housing of the compressor unit, a gastight partition which extends between the stator and the rotor of the electric motor, and at least one a first end wall which extends between the gastight partition and the common gastight housing of the compressor unit and at least one further a second end wall arranged opposite the first end wall and configured to isolate the stator from the compressor in cooperation with the gastight partition and the first end wall, wherein the gastight partition extends freely between the stator and the rotor of the electric motor and comprises a material of sufficiently high strength for it to remain clear of the stator and the rotor under working pressures of the gas which may occur inside the common gastight housing, wherein the high-strength material of the gastight partition comprises a fibre-reinforced plastic ---

# Allowable Subject Matter

- 9. Claims 1 and 3-12 are allowed.
- 10. The following is an examiner's statement of reasons for allowance:

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a. With respect to claims 1 and 12 the prior art fails to teach or suggest the limitations of a multistage centrifugal compressor or method of compressing gas with a multistage centrifugal compressor comprising a rotor supported by first and second magnetic radial bearings arranged at opposite ends of a rotor, a magnetic thrust bearing arranged adjacent to one of the first and second radial magnetic bearings, in combination with a stator accommodated and isolated from the compressor in a separate stator space wherein the stator space is delimited by a wall section radially and axially surrounding the stator and a gastight partition which extends between the stator and the rotor wherein a first and second end wall are arranged opposite to one another and configured to isolate the stator from the compressor in cooperation with gastight partition, wherein the gastight partition comprises a high strength material of fibre-reinforced plastic.

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The prior art of Kullik DE 19904119 fails to teach a compressor that is a multistage compressor, a compressor supported by magnetic radial bearings and a magnetic thrust bearing, and a partition and two end walls which isolate a stator. Kullik instead teaches a single stage compressor, gas slide bearings, and a cylindrical can with one end wall to isolate a stator.

The prior art of Dunning 3,951,573 teaches a single stage compressor supported axially by a gas slide bearing, and radially by a journal bearing.

Dunning does not teach a multistage compressor comprising magnetic radial bearings and a magnetic thrust bearing.

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b. With respect to claims 11 the prior art fails to teach or suggest the method of producing a gastight partition for a compressor unit including a multistage centrifugal compressor including a rotor supported by first and second magnetic radial bearings, a magnetic thrust bearing adjacent to one of the first and second magnetic radial bearings, a gastight partition formed from cured fibre-reinforced plastic which extends between the stator and the rotor wherein the method includes the steps of producing an inner layer and a outer layer of a gastight partition separately in the form of an inner shell and an outer shell, the external diameter of the inner shell, under the same pressure and temperature, being larger that the internal diameter of the outer shell, the step of temporarily increasing the diameter of the outer shell by means of gas or liquid pressure or temporarily reducing the diameter of the inner shell by lowering the temperature so that it is possible to push the inner shell into the outer shell, and restoring the diameter of one of the inner or outer shells that has been altered by restoring a pressure or temperature.

The prior art of the Dunning, Brunet et al. US 6,350,109, and Lee et al. US 6,336,986 in combination, does not teach the method claimed for a compressor comprising radial magnetic bearings and a magnetic thrust bearing. Further the method relied on in Lee is for a curing stage for producing a composite tube in which an axial compressive force is applied to a metal shaft while co-curing the metal shaft with a composite material layer which has had a thermal shrinkage tube placed on it. The method claimed does not required an axial force to be

applied to either of an inner or outer shell and the material forming the inner and outer shells has already been cured (pg. 7 II. 4-22 of PCT/NL03/00692 and ¶0028 of the substitute specification submitted on April 14, 2005 for the instant application).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/ Supervisory Patent Examiner, Art Unit 3746

/Leonard J Weinstein/ Examiner, Art Unit 3746